MIGRANT AND SEASONAL FARMWORKER

ENUMERATION PROFILES STUDY

WASHINGTON

FINAL

prepared for the

Migrant Health Program
Bureau of Primary Health Care
Health Resources and Services Administration

by

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PREFACE

The mission of the Bureau of Primary Health Care (BPHC), Health Resources and Services Administration, Department of Health and Human Services is to increase access to comprehensive primary and preventive health care and to improve the health status of under served and vulnerable populations. To achieve this mission the Migrant Health Program (MHP), BPHC provides support to organizations which offer technical assistance to or directly deliver primary health care services to migrant and seasonal farmworkers (MSFWs). In order to better plan, develop and evaluate health care service delivery and utilization, information is needed on the numbers and distribution of farmworkers at the national, state, and county levels. Moreover, the legislation which authorizes the Migrant Health Program, Section 330g of the Public Health Service Act, requires that priorities for assistance be assigned to areas where the greatest need exists. Therefore, the MHP periodically seeks to obtain updated information about MSFWs; where they are working and living and what crops are being harvested, in order to more appropriately target limited resources to areas of greatest MSFW need.

These MHP enumeration reports are some of the few sources offering MSFW estimates at the county level. The last time such data was published by the MHP was in March 1990 with "An ATLAS of State Profiles Which Estimate Number of Migrant and Seasonal Farmworkers and Members of Their Families." This time with the Office of Pesticide Programs, U.S. Environmental Protection Agency as a funding partner, the MHP awarded a grant to the National Center for Farmworker Health, Inc. (NCFH). The NCFH consequently contracted with Alice C. Larson, Ph.D. of Larson Assistance Services to research and develop state estimates.

In the previous publication "ATLAS of State Profiles" the counting of MSFWs was done on a state-by-state basis which depended on the available data resources within each state, then a consultant was used to validate each state's submission. For this publication, Dr. Larson, assisted by a team of consultants, used a systematic approach to estimate the number of farmworkers included under the MHP definition. Please note that in this document farmworker dependents and family members within their households are labeled "non-farmworkers" although they are clearly included in the MHP definition. This research included the determination of the number of workers needed for specific seasonal hand labor tasks, and the examination of state employment records, local sources of information and large-scale databases (i.e., the National Agricultural Workers Survey of the U.S. Department of Labor, the National Farmworker Database of the Association of Farmworker Opportunity Programs, the Uniform Data System of the Bureau of Primary Health Care and

the Census of Agriculture of the Bureau of the Census and U.S. Department of Agriculture). A major part of this effort involved the review of draft estimates by local and national knowledgeable individuals.

In this document, the MHP presents currently updated MSFW information beginning with ten states: Arkansas, California, Florida, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Texas and Washington. The MHP hopes to continue these collaborative efforts with other federal agencies and organizations in order to update the remaining states impacted and benefiting by the labor of our Nation's farmworkers.

Readers may wish to address questions or comments concerning these state estimates directly to Alice C. Larson, Ph.D., P.O. Box 801, Vashon Island, WA 98070 or via e-mail to las@wolfenet.com. It is our hope and expectation that all federal, state, local public and private entities providing services to MSFWs will use this state and county specific enumeration data to plan, develop and implement improved services to our Nation's farmworkers.

The Migrant Health Program, BPHC gratefully acknowledges the efforts of the many groups across the nation who have made this publication possible. Our thanks not only to those who directly reviewed and commented on the estimates, but to those who participated and assisted along the way.

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ACKNOWLEDGEMENTS

The research team is extremely grateful to the many people in Washington who offered information, data and suggestions that helped make this study possible. In addition, those who took the time to review draft documents offered a major contribution to improving the end result.

Estimating migrant and seasonal farmworkers and their non-farmworker household members is an extremely challenging task. This research has attempted to examine existing data and develop a reasonable approach to the estimation process. The user should carefully consider the description of study parameters to understand what is included or excluded from the final figures and the limitations of the research.

It is hoped this document will be found to be helpful in meeting the need for descriptive information on the migrant and seasonal farmworker population.

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DOCUMENT DESCRIPTION

A. BACKGROUND

The Migrant Health Program of the Bureau of Primary Health Care, Health Resources and Services Administration, U.S. Department of Health and Human Services has periodically undertaken an estimation of the population targeted for services by federally funded Migrant Health Centers. The results have helped better plan service utilization including determining if resources are appropriate to the need and identification of unserved areas. Four such studies have previously been undertaken; the last was published in 1990, *The Migrant Health Atlas*.

The Migrant Health Program is updating this information beginning with ten states: Arkansas, California, Florida, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, Texas and Washington. Final reports, titled "Migrant and Seasonal Farmworker Enumeration Profiles Study" (MSFW EPS) were prepared for each target state.

The National Center for Farmworker Health was engaged by the Migrant Health Program to act as its agent in securing, monitoring and finalizing an end product. In July 1998, agreement was reached with Larson Assistance Services to research and develop state estimates. Alice C. Larson, Ph.D., with the assistance of a team of consultants, is responsible for this document containing MSFW estimates for Washington.

B. STUDY PURPOSE

The MSFW EPS offers state-based information at the county level for the following three population sub-groups:

- Migrant farmworkers and seasonal farmworkers.
- Non-farmworkers present in the same household as migrant farmworkers and seasonal farmworkers (defined by the term "accompanied").
- Number of people ("children and youth") under age 20 in six age groups.

C. DEFINITION

The MSFW definition used for this study is that of the Migrant Health Program. It

describes a seasonal farmworker as:

> "An individual whose principal employment [51% of time] is in agriculture on a seasonal basis, who has been so employed within the last twenty-four months."

A migrant farmworker meets the same definition but "establishes for the purposes of such employment a temporary abode." (*U.S. Code*, Public Health Services Act, "Migrant Health")

Included in the scope of study are individuals engaged in field and orchard agriculture; packing and sorting procedures in food processing; horticultural specialties (including nursery operations, greenhouse activities and crops grown under cover); and reforestation. Excluded from study are those working with livestock, poultry, and fisheries.

D. LIMITATIONS

This study is limited in scope in that only secondary source material, including existing database information, and knowledgeable individuals, have been utilized to generate information. This has meant taking reports and databases prepared for other purposes and adjusting them, as possible, for the MSFW EPS. Limited resources and time have prohibited primary research directly with farmworkers.

In addition, by employing only secondary source information, the definition of who is included as a migrant or seasonal farmworker is often tied to the parameters used by the generating source. Wherever possible, screens were used to exclude those not covered by the Migrant Health Program definition.

E. GENERAL PROCESS

1. Basic Investigation Techniques

The research conducted within each state had four major phases:

(1) Basic data gathering and preparation of First Draft Estimate.
(2) Review by local knowledgeable individuals and revision of First Draft Estimate.
(3) Completion of Second Draft Estimate and additional review by a wider audience of knowledgeable individuals.
(4) Revision as necessary and issuance of Final Estimate.

2. National Databases

Prior to completion of any state profile, two national databases were analyzed specifically for this study. They represent the two largest continuous direct surveys of MSFWs in the country as of 1999.

> The National Farmworker Database (NFD) of the Association of Farmworker Opportunity Programs contains information on clients eligible for services at job training programs targeted to MSFWs (Workforce Investment Act – WIA 167 Programs; formerly JTPA 402 Programs). This database, tied to programs throughout the country, contains 65,000 individuals and includes basic demographic, family characteristic and work history information. Figures from 1994 through August 1998 were used for this study and provided national and some state data.
>
> The National Agricultural Workers Survey (NAWS) of the U.S. Department of Labor (coordinated by Aguirre International) is a survey conducted three times annually gathering similar information through random selection of targeted counties, employers and subjects. Demographic, family and work history information is similar to the NFD. Data for a five-year period (1993-97) were used in the MSFW EPS, which included over 11,000 respondents offering national and regional information.

A third national database used to develop factor information was Migrant Health Program statistics prepared annually by each federally funded migrant health center. These gave the number of migrant farmworker and seasonal farmworker patients served. Data for 1996 and 1997, where available, were averaged.

3. State Specific Steps

Work on each target state began with a mass mailing to identified service organizations assisting MSFWs, government agencies involved with agriculture, farm employer and crop commodity groups, special interagency MSFW committees and others. These included: migrant health centers, primary care associations, migrant education programs, migrant head start programs, legal services, job training programs, housing assistance centers, grower associations, extension service and agricultural economics departments of state land grant universities and other agents. State government agencies involved with agriculture, education, employment, forestry, health, labor and welfare were contacted.

Each was sent an introductory letter and questionnaire listing study factors for which information was sought. Those contacted were asked to provide anything they might have directly or list other resource documents or personnel.

Follow-up contacts were made with numerous individuals and internet sites from a variety of programs and agencies (a range of 14-54 for each of the ten target states) looking for state-specific information such as client-related demographics, enrollment data, crop production figures and acreage statistics. Although many different individuals, agencies, organizations and businesses were contacted, the list was in no way exhaustive of all of those involved with agriculture and MSFWs in each state. It is expected most of the key knowledgeable individuals were reached, many of whom were identified by questionnaire respondents.

Once all state specific information was received, factor information was extracted. Sources were compared and analyzed to account for any differences. Results were contrasted against national database information and conclusions drawn regarding the best factor, data range or average to use. Draft estimates and maps were then prepared for review.

4. Review of Draft Estimates

The Draft One document was sent out for review to knowledgeable individuals in the state who had provided information for preparation of the estimates, assisted in some other manner, or expressed an interest in receiving a copy.

Reviewers were asked to comment on methodological steps, resources utilized and factors employed. If they found something they felt was incorrect, they were requested to offer suggestions for improvement in the form of specific information which could be incorporated into the estimates. Where clarification was needed after receipt of comments, direct conversation or exchange of correspondence were utilized to assure a complete understanding of the issues raised or obtain additional information. Often additional research was necessary to determine the appropriate direction to correct the estimates.

After consideration of all issues raised from a variety of sources, revisions were made as necessary. Draft Two estimates, tables, maps and supporting documents were then prepared and shared with Draft One reviewers as well as other local and national sources. Comments were again incorporated into the Final Report. In all, 13 people helped review and refine the Washington estimates and document.

F. ENUMERATION METHODOLOGY

The four separate industry classifications within the study MSFW definition; field agriculture, nursery/greenhouse -- crops grown under cover, food processing and reforestation; were each addressed differently. Two separate methodologies

were used to estimate those employed in field agriculture and the results compared. Adjustments were made to all worker estimates to account for underemployment and duplicate counts within and across counties. Finally, population sub-groups and children's and youth's ages were calculated.

1. Field Agriculture

a. Demand-For-Labor Method

The first estimate of field agriculture used a "demand for labor" (DFL) process that examines the number of workers needed to perform temporary agricultural tasks, primarily harvesting. The results estimate full-time equivalent (FTE) workers required for the task during the period of peak labor demand. Calculations, prepared for each county, are derived through a formula using four elements:

$$DFL = \frac{A \times H}{W \times S}$$

Where:

A = crop acreage.

H = hours needed to perform a specific task (e.g., harvest) on one acre of the crop.

W = work hours per farmworker per day during maximum activity.

S = season length for peak work activity.

b. Comparison Method – Administrative Data

Washington State is one of only two states in the country with virtually complete unemployment insurance coverage. This means MSFWs, who are typically excluded by not working sufficient hours for any single employer, are eligible under this program. In regard to available information, it also means farm employers report almost all temporary as well as longer-term employees.

Such information is recorded on a monthly basis including all individuals on an employer's payroll as of the pay period including the 12th day of the month. The form, and data it contains, are referred to as "ES 202." These reports are collected and tabulated by the Washington Employment Security Department (and reported at the Federal level by the U.S. Department of Labor, Bureau of Labor Statistics as "Employment and Wages Monthly Employment").

Sorting includes determination of employer industry, defined by Standard Industrial Classification (SIC) code. What is unclear within these, however, is how many individuals are represented when monthly data are either added or averaged.

The Employment Security Department conducted a special "separation-accession" study using statewide ES 202 data for various industry SICs including those relevant to the MSFW EPS. The study looked at the number of individuals who remained, left or came to work for individual employers within a three-month period (a quarter). The results helped to define the issue of the exact number of individuals represented by annual ES 202 figures, but duplication was still a factor when more than one quarter was examined.

The methodology used in this Study to estimate Washington MSFWs looked at separation-accession data for the peak employment quarter (July, August, September). Simply adding the number of individuals reported to either leave (separation) or come to work (accession) within that quarter would still allow for a great deal of duplication as individuals might leave and return to work for the same employer within a three-month period. As a result, only the accession figures were used.

Some of those individuals in the "same" category (remain with the same employer all three months) could also be considered MSFWs, although many are permanent workers. To determine the number of non-permanent workers, the other three quarters for the twelve month period were examined and the lowest "same" figure was subtracted from the peak quarter "same" figure. The low figure was assumed to represent permanent workers. This technique was performed for each separate SIC, and the results added to the "accession" figure.

The subsequent statewide estimate was allocated to counties using the proportional share each county represents of the total DFL estimate.

One remaining issue with this methodology is that using only peak accession figures leaves out many workers who might be employed some other time of the year. This is particularly true of a crop like asparagus, harvested April-May.

An additional source listing crop activity months served to identify where this might be relevant. This same source, available by month and for a series of years, was used to find the percent difference for major crop activity between the peak quarter and other quarters. For example, it was determined only 7.8% of asparagus workers might be covered during the statewide peak employment quarter of July, August and September. The other 92.2% are more likely to be employed during the second quarter (April, May, June).

These percentages were then applied to DFL estimates for the specific crop and this added to the total for each county where these crops were produced.

2. Nursery/Greenhouse and Crops Grown Under Cover

Nursery/greenhouse workers and those employed in crops grown under cover involves many different categories. This includes: bedding plants, cut flowers, florist greens, floriculture, flower seed crops, foliage plants, greenhouse vegetables, mushroom production, potted flowering plants, sod and vegetable seed crops. Some products are grown in covered structures while others are raised in open acreage. Tasks differ with product type and production needs.

A method similar to the Administrative Data technique employed as a comparison for the field worker estimate was used for nursery/greenhouse and crops grown under cover. Peak quarter accession figures were combined with those in the "same" category determined not to be permanent workers. The county proportion of the state acreage and enclosed space total for nursery/greenhouse operations and crops grown under cover was calculated and multiplied by the statewide Administrative Data figure to determine each county's temporary worker share.

3. Food Processing

Three Standard Industrial Classification (SIC) codes were identified as most likely to meet the Migrant Health Program definition used in this study. For the first two SICs, the Administrative Data method was applied to determine a peak employment statewide figure for temporary workers.

Accession/separation information was not available for the remaining SIC. The best resource to estimate the workers in this category was found to be similar direct reports, but information was only available for total monthly employment. The technique applied subtracted the lowest monthly total (assumed to be permanent workers) from the highest monthly total to estimate statewide temporary workers. Results for a three-year period were averaged to avoid any aberration attributable to a single year.

Each of the three SIC calculations resulted in statewide food processing temporary worker figures that then had to be allocated to appropriate counties. Information on companies involved in food processing in each county was pulled from a national directory to determine the county share of total statewide food processing workers. The resulting percentages were applied to the statewide estimates for the three SICs.

Last, specific information was obtained related to food processing employment in one county that did not appear in any of the above data sources. This was added to the nursery/greenhouse estimate for that county.

4. Reforestation

Reforestation activity is different from work in the other industry classifications as stands of trees are left to grow from five to forty-five years or longer. This means only a proportion of timberland in a state is engaged by tree planters each year. As the exact location of this labor differs annually, a worker estimate can only be provided on a statewide basis.

A DFL approach was taken to estimate tree planters using statewide data. Research found a set of factors for the DFL elements felt to be relevant to the types of trees grown in Washington.

5. Adjustment to the Base Estimates

a. Underemployment Rate

A number of sources indicated underemployment was a factor among workers in Washington; i.e., individuals employed for less than full-time. This included a study prepared for the Commission on Agricultural Workers (Kissam, Garcia and Runsten, 1991), and information from worker interviews and employer depositions (Smith, 2000). Despite the availability of this evidence, the factor was very difficult to quantify as no special studies have been conducted specifically on this matter.

The method chosen used information from the Kissam, Garcia and Runsten study that involved interviews of workers during peak apple and asparagus harvest seasons. Information gathered included hours worked per week from workers at eight establishments in each crop. The results provided the average worker hours per establishment for apples and asparagus.

These worker hours per establishment were then averaged for all eight establishments producing a specific crop (either apples or asparagus) and compared with the average number of weekly work hours considered to be full-time employment for MSFWs, as determined in the NAWS. The result indicated a percent of full-time employment for those involved in the study survey. This percent was applied to MSFW EPS worker DFL estimates specific to apples and asparagus and then averaged for all other crops.

b. Factor for Duplication

An adjustment was made to account for those employed in more than one job covered by the MSFW definition. This involved dividing all worker estimates by a

factor for average jobs per MSFW. These adjusted county estimates could then be more appropriately added to develop a state total.

6. Sub-Group Estimates

Sub-groups estimated for the study included migrant farmworkers, seasonal farmworkers, non-farmworker family members accompanying farmworkers and children and youth in specified age groups. Migrant farmworkers encompassed individuals who migrated only within the state (intrastate migrants), and those who traveled out of state for farm work (interstate migrants).

Both "non-farmworkers" and "children and youth" were estimated. The first group included anyone of any age in the household who was not employed in farm work. The latter group covered anyone in the household from ages less than one through nineteen. Although the category "children and youth" involves those of a young age who would be considered non-farmworkers, it also includes older individuals who may be farmworkers.

Sub-group calculations were made, at a county level, as follows:

- Apply percent identified as migrant workers and percent identified as seasonal workers to adjusted MSFW estimates.
- Determine the percent of each sub-group, migrant workers and seasonal workers, accompanied. This is as opposed to workers who represent single person households; for example, 14 unrelated men living in one household would represent 14 single person households.
- Divide the group of accompanied workers by the average number of farmworkers per household to determine the number of accompanied households.
- Multiply the number of accompanied households by the average number of other members per household to derive the number of "non-farmworkers."

The following age groupings were determined to be the most useful descriptors for the population considered "children and youth," given the needs of funding sources and health care programs: under 1 year, 1-4, 5-12, 13-14, 15-18, and 19. Factors were found to derive the number of individuals in each accompanied household who were less than 20 years old. These were multiplied by the estimate of accompanied migrant and seasonal households to find total number of migrant and seasonal children and youth. A variety of sources were then examined to derive percent of the population in each age group.

G. RESOURCES UTILIZED FOR WASHINGTON ESTIMATES

Factor information was gathered from the primary sources listed below. In addition and where available, local information was utilized as a check or as a replacement for broader national or regional data.

1. Field Agriculture

a. Demand-For-Labor Sources

Crops Requiring Temporary Hand Laborers: NAWS direct survey data on respondent work history were examined at the regional level, which includes Washington and Oregon, to determine the crops and tasks worked. This information was compared to information published by the Washington Employment Security Department on agricultural hand labor crops and tasks.

Acreage: 1997 Census of Agriculture (COA) acreage for identified hand labor crops by county were used. This included cut Christmas trees. After discussion with agricultural experts and others, it was determined crops of fewer than ten acres are less likely to employ hired workers and more likely to use family members. Accordingly, any crop in a county with such small acreage was dropped. A local knowledgeable expert (McCibbin, 2000) provided information relevant to a recent increase in grape acreage in Walla Walla County.

Hours for Task: "Crop budgets" and other special reports prepared by agricultural economists and extension specialists as a guide to crop production were utilized to determine hours needed to perform major hand labor tasks on each crop. For Washington, this included budgets prepared by Washington State University and published on their web site. Another source that contributed information was a report prepared for the Washington Department of Community Development where DFL was also utilized as a methodology (Larson, 1992).

In addition, the *Migrant Enumeration Project, 1993* (Larson and Plascencia) had updated earlier 1970s-80s estimates. These were supplemented through a search of other budgets specific to the study target states.

Where state specific information was available and determined to be reasonably accurate for a given crop, it was used. Otherwise an average of other sources was applied. The results vary per crop.

Work Hours: The NAWS was found to be the only national source for hours per week and days per week worked by MSFWs. The latest five-year averages showed 38.6 hours/week during a five-day work week. The resulting 7.7 hours/day factor was used in the calculation.

Season Length: Peak hand labor season dates specific to field crops in Washington were obtained from "Usual Planting and Harvesting Dates" (National Agricultural Statistics Service, USDA web site). Season length for other crops was taken from the *Migrant Enumeration Project* with updates from state specific publications of the U.S. Department of Agriculture. Calendar days were converted to work days by dividing the total number by seven to determine number of weeks and then multiplying by five for number of average MSFW work days per week (as noted in NAWS data).

b. Administrative Data Sources

The "Separation/Accession Study" which served as the focus of the Administrative Data methodology is an internal working document of the Washington Employment Security Department (1999). It utilized data from 1997-1998. Three-digit SICs were available in this study and the following were used: all 01x (except 018 used later for nursery/greenhouse estimates), 071, 072, and 076. Four consecutive quarters were examined for use in the MSFW EPS.

Data gathered relative to "Washington State Agricultural Seasonal Hired Farm Workers Employment and Wages by Area and Crop Activity" were used to examine crop activity by month. Information from five years, 1994-1998, was averaged.

c. Results Of Two Estimation Methods

The statewide total from the DFL estimate (including nursery/greenhouse, crops under cover, food process and forestry workers) was 186,976. The statewide results from the Administrative Data estimate, (covering the same industries) was 180,961. There is only 6,015 difference between these two estimates. The DFL results were used in final MSFW EPS calculations.

2. Nursery/Greenhouse and Crops Grown Under Cover

The "Separation/Accession Study" noted above also served as the centerpiece for estimates of workers in nursery/greenhouse and crops grown under cover (SIC 018). Similarly, the monthly crop data available through the "State Agricultural Seasonal Workers" was also used to account for workers employed other than in the third quarter of the year (July, August, September).

County data from the 1997 COA for nursery and greenhouse acres in the open and square feet under glass were used to proportion the state nursery/ greenhouse worker estimate into counties. COA figures for mushroom and

greenhouse vegetable acreage and square feet under glass were similarly used to proportion the statewide estimate for crops grown under cover.

3. Food Processing

Again, the Administrative Data method utilized the "Separation/Accession Study" looking at SIC 203, covering SIC 2033 (canned fruits and vegetables) and 2037 (frozen fruits, fruit juices and vegetables). Maximum employment was found to occur in the third annual quarter, similar to field agriculture. There were no monthly data related to this SIC available for comparative purposes.

Information from the *Directory of Canning, Freezing, Preserving Industries, 1998-99* (Edward E. Judge and Sons) determined companies engaged in food processing activities. This source offered a range for total employment at each site, with the mid-point of this range chosen to represent exact number of employees. City locations were attributed to counties as cross-referenced in *Bullinger's 1997 Postal and Shippers Guide* (Alfer Leland). Total food processing employment for each county was tabulated and a calculation made of each county's share of the state total. These percentages were then applied to the SIC 203 statewide estimate.

For SIC 0723 (crop preparation for market), calculations based on information in the "Employment and Wages Monthly Employment," *ES 202* report (U.S. Department of Labor, Bureau of Labor Statistics) provided monthly employment totals. The resulting statewide figure for temporary workers was multiplied by the SIC 203 percentages to attribute estimates to counties.

Additional information was obtained from a knowledgeable expert indicating 1,000 seasonal food processing workers employed in Columbia County (Graham, 2000). This figure was not noted in any of the above calculations and so was applied to the food processing estimate for that county.

4. Reforestation

The DFL factors used to estimate reforestation workers were:

> Acreage information was obtained from *Tree Planting in the United States*, an annual publication of the United States Department of Agriculture, Forest Service. The years 1992-1996 created a five-year average.
>
> Work Hours were generally agreed to be eight per day as reported by various forestry experts.
>
> Hours for Task to plant fir, cedar, hemlock and other similar trees grown in

Washington is thought to be 3.8, calculated at an average 2.105 acres per day planted per worker in an 8 hour day (Sargent, 2000).

Season Length for similar types of trees averages 22.14 days, calculated on a 45 day peak season working 40 hours per week minus 10 days for weather-related reasons (Sargent, 2000).

5. Adjustment Factors

a. Source for Underemployment Factor

The study "The Apple and Asparagus Industries in Washington," in the document *Case Studies and Research Reports Prepared for the Commission on Agricultural Workers, 1989-1993*, (Kissam, Garcia and Runsten, 1994) provided the worker interview data on weekly hours employed that formed the basis for the underemployment factor. NAWS information was used to define full-time employment for comparative purposes.

b. Source for Duplication Factor

No data on jobs per county or jobs per state could be located. The only information found was from both NFD and NAWS for average jobs/worker for approximately a twelve-month period. For lack of better factor information, the resulting figures from these two sources, at a national level, were averaged to derive a factor of 1.665 jobs/worker.

6. Sub-Groups

Migrant/Seasonal: Three sources were averaged: NAWS regional data, direct patient counts from information reported to the Bureau of Primary Care for nine federally funded health centers in Washington, and direct patient reports from all services of the Yakima Valley Farmworkers Clinic delivered in Washington. The result was 34.8% migrant farmworkers; 65.2% seasonal farmworkers.

Accompanied: No NFD state information was available for Washington. As a consequence, regional NAWS percentages were used to represent migrant workers (48.0%) accompanied by relatives and seasonal workers (65.9%) residing in multiple person families.

Farmworkers Per Household: The best source found was NAWS regional information of 2.45 farmworkers per accompanied household for migrants and 2.00 for seasonals.

Non-Farmworkers Per Household: Lacking NFD state data, NAWS regional factors were used to determine total household size. The number of farmworkers per household was subtracted to calculate non-farmworkers per household: 1.31 for migrants and 2.13 for seasonals.

7. Children and Youth by Age Groups

"Children and youth," as defined in the MSFW EPS are those ages infant through 19. Whether or not these individuals perform farm work does not matter for purposes of this calculation, and therefore, the group "MSFW farmworkers" and the group "children and youth" are not mutually exclusive.

NAWS regional figures on children and youth per household were used for the number of those under 20 years of age (1.34 for migrants; 1.85 for seasonals). The results found 17,082 migrant and 74,312 seasonal children and youth.

These individuals were divided into the following age groups using percentages from regional NAWS information:

Migrants: under 1 = 8.4%, ages 1-4 = 13.5%, ages 5-12 = 30.3%, ages 13-14 = 3.7%, ages 15-18 = 32.5%, and age 19 = 11.6%.

Seasonals: under 1 = 6.8%, ages 1-4 = 25.1%, ages 5-12 = 39.8%, ages 13-14 = 6.1%, ages 15-18 = 17.0%, and age 19 = 5.2%.

TABLE ONE

WASHINGTON MSFW ENUMERATION PROFILES ESTIMATES

FINAL

FIELD AGRICULTURE, NURSERY/GREENHOUSE AND FOOD PROCESSING

County	Adjusted MSFW Farmworker Estimates	Migrant Farmworkers	Seasonal Farmworkers	Non-Farmworkers In Migrant Households	Non-Farmworkers In Seasonal Households	MSFW Farmworkers And Non-Farmworkers
Adams	2,962	1,031	1,931	265	1,355	4,582
Asotin	63	22	41	6	29	97
Benton	22,338	7,773	14,564	1,995	10,222	34,554
Chelan	17,055	5,935	11,120	1,523	7,804	26,382
Clallam	166	58	108	15	76	257
Clark	1,428	497	931	128	654	2,210
Columbia	607	211	396	54	278	938
Cowlitz	318	111	208	28	146	492
Douglas	8,612	2,997	5,615	769	3,941	13,323
Ferry	13	5	9	1	6	21
Franklin	15,840	5,512	10,328	1,415	7,248	24,503
Garfield	0	0	0	0	0	0
Grant	28,941	10,071	18,870	2,585	13,243	44,769
Grays Harbor	483	168	315	43	221	747
Island	31	11	20	3	14	47
Jefferson	2	1	1	0	1	3
King	699	243	456	62	320	1,081
Kitsap	235	82	153	21	108	364
Kittitas	1,105	384	720	99	506	1,709
Klickitat	2,079	723	1,355	186	951	3,215
Lewis	1,320	460	861	118	604	2,043
Lincoln	55	19	36	5	25	85
Mason	222	77	145	20	102	344
Okanogan	9,820	3,417	6,403	877	4,494	15,190
Pacific	129	45	84	12	59	200
Pend Oreille	0	0	0	0	0	0
Pierce	1,631	568	1,063	146	746	2,523
San Juan	18	6	12	2	8	28
Skagit	4,175	1,453	2,722	373	1,910	6,458
Skamania	248	86	162	22	113	384
Snohomish	999	348	651	89	457	1,545
Spokane	495	172	323	44	226	765
Stevens	122	42	79	11	56	188
Thurston	669	233	436	60	306	1,035
Wahkiakum	0	0	0	0	0	0
Walla Walla	6,111	2,127	3,985	546	2,797	9,454
Whatcom	3,170	1,103	2,067	283	1,451	4,904
Whitman	451	157	294	40	206	698
Yakima	52,476	18,262	34,214	4,687	24,013	81,175
Total State	185,088	64,411	120,677	16,531	84,696	286,315
Reforestation						
Total State	1,888	657	1,231	169	864	2,920
Grand State Total	**186,976**	**65,068**	**121,908**	**16,700**	**85,559**	**289,235**

NOTE: County numbers have been rounded and, therefore, may not exactly add to totals.

CHILDREN AND YOUTH BY AGE GROUPS (STATEWIDE)

Age Groups	Migrant Percent	Number of Children And Youth	Seasonal Percent	Number of Children And Youth
< 1	8.4%	1,435	6.8%	5,053
1-4	13.5%	2,306	25.1%	18,652
5-12	30.3%	5,176	39.8%	29,576
13-14	3.7%	632	6.1%	4,533
15-18	32.5%	5,552	17.0%	12,633
19	11.6%	1,982	5.2%	3,864
Total	**100.0%**	**17,082**	**100.0%**	**74,312**

NOTE: "Children and Youth" are defined as those under 20 years of age. Some may be farmworkers

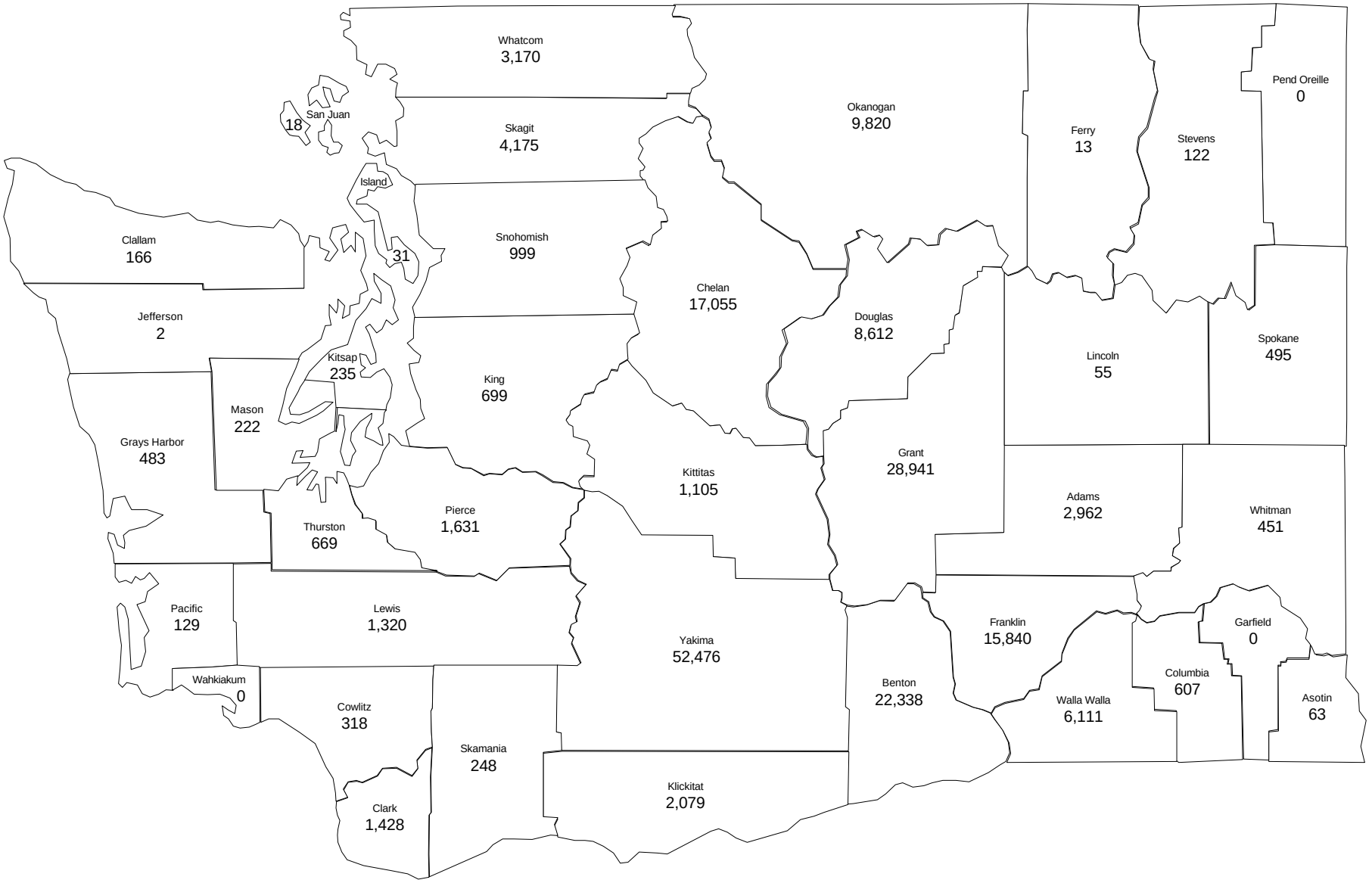
TABLE TWO

WASHINGTON DEMAND FOR LABOR FACTORS

FINAL

Crop	Hours For Task	Daily Work Hours	Peak Season Length (Work Days)
Apples	90.5	7.7	30.48
Apricots	96	7.7	16.43
Asparagus	84	7.7	20.71
Berries	155.04	7.7	26.07
Blackberries	60	7.7	37
Blueberries	106	7.7	51
Cantaloups	60	7.7	23.9
Carrots	10.57	7.7	21.43
Celery	125.7	7.7	10.71
Cherries	267.61	7.7	8.47
Chinese peas	28	7.7	37.14
Christmas trees	31.7	7.7	21.43
Cranberries	24 dry (10%)	7.7	12.5
	12 wet (90%)	7.7	12.5
Cucumbers and pickles	110	7.7	47.86
Dry onions	77.64	7.7	22.14
English walnuts	80	7.7	22.86
Filberts and hazelnuts	45	7.7	17.86
Grapes	40.32	7.7	17.14
Green onions	220	7.7	51
Green peas	28	7.7	37.14
Head cabbage	90	7.7	38.57
Herbs	293	7.7	33.57
Honeydew melons	120	7.7	22
Hops	58.58	7.7	37
Hot peppers	272	7.7	73
Lettuce and romaine	107	7.7	59.29
Lima beans	9	7.7	5.71
Mint for oil	4	7.7	31
Mustard greens	178	7.7	22
Nectarines	38	7.7	30
Peaches	73	7.7	15.71
Pears	78.94	7.7	15
Plums and prunes	34	7.7	5
Potatoes	11	7.7	54.29
Pumpkins	22	7.7	53
Raspberries	40	7.7	22
Rhubarb	120	7.7	15.71
Snap beans	37.92	7.7	32.86
Spinach	218	7.7	9.29
Squash	110	7.7	30
Strawberries	556	7.7	7.86
Sugar beets	2.78	7.7	21.42
Sweet cherries	267.61	7.7	10.26
Sweet corn	37	7.7	31.07
Sweet peppers	128	7.7	57
Tart cherries	13	7.7	6.67
Tomatoes	280	7.7	32.69
Turnips	26	7.7	36
Watermelons	53	7.7	28.54

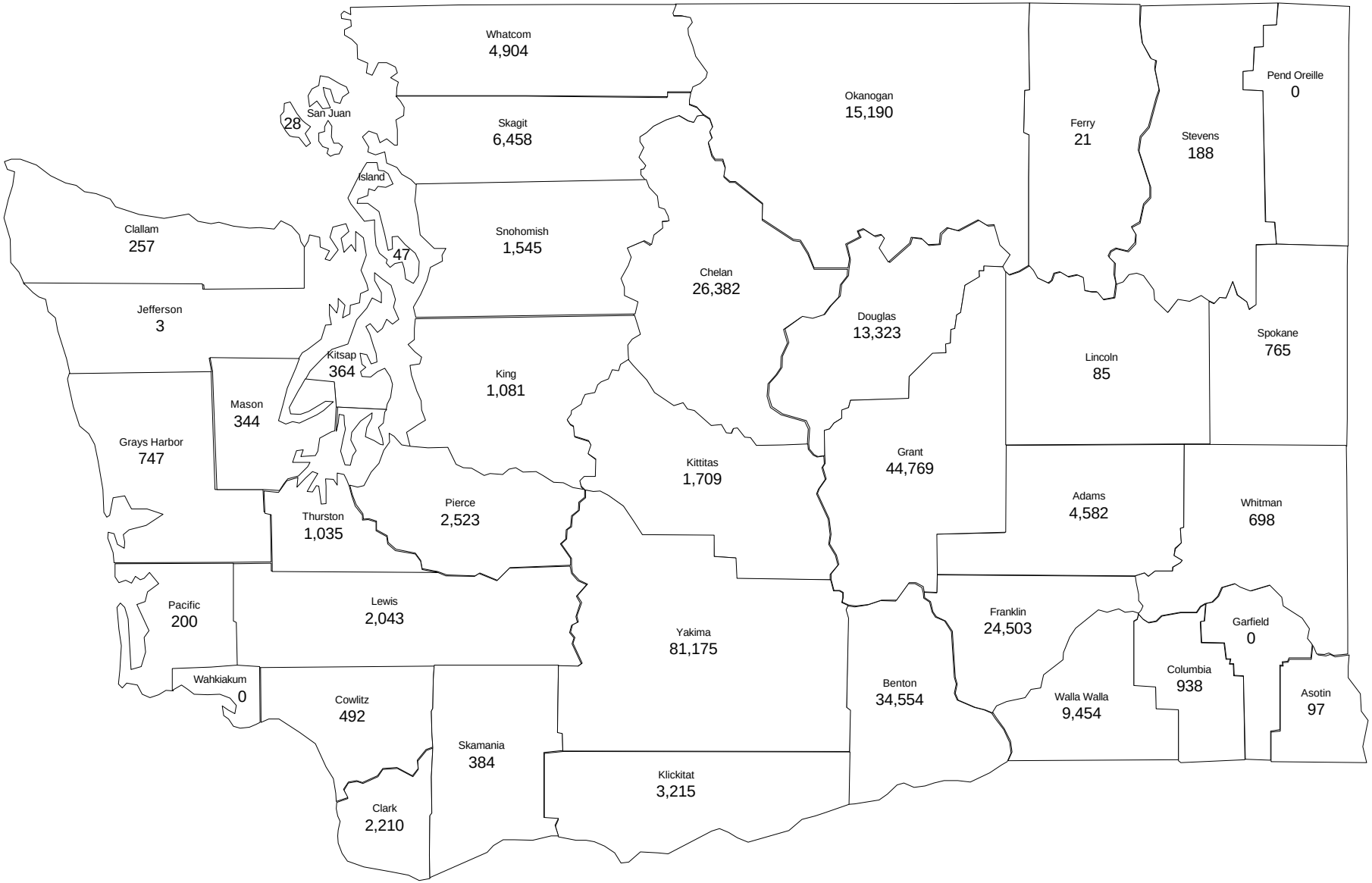
Washington Estimates For MSFW Workers Only
By County -- Final



Reforestation Statewide: **1,888**

Grand Total -- MSFWs in Washington: **186,976**

Washington Estimates For MSFW Workers And Non-Workers By County -- Final



Reforestation -- Workers and Non-Workers Statewide: 2,920

Grand Total -- MSFW Workers and Non-Workers in Washington: 289,235

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